



Attorney Docket No. ATI-197

UNITED STATES PATENT AND TRADEMARK OFFICE

Examiner: G. Arthur

Art Unit: 3661

Re: Application of:

David S. Breed et al.

Serial No.:

09/382,406

Filed:

August 24, 1999

For:

Method for Developing a System for
Identifying the Presence and Orientation of an
Object in a Vehicle

*7/1/02
Heel
3/13/02
Holas*

DECLARATION OF INVENTOR DAVID S. BREED UNDER 37 C.F.R. §1.132

Assistant Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

I, David S. Breed, do hereby declare that:

1. I am an inventor of the invention disclosed and claimed in the above-identified application.

2. I have been involved in the automotive industry for more than 30 years and particularly, among other things, in the design, development and implementation of automotive safety systems for preventing injuries to vehicular occupants. I am a named inventor of numerous patents, U.S. and foreign, directed to such automotive safety systems.

3. I developed a method for developing a system for identifying the presence and orientation of an object in a vehicle in which transducers are mounted in the vehicle, one or more databases comprising multiple data sets are formed, each data set representing a different occupancy state of the seat and being formed by receiving data from the transducers while the seat is in that occupancy state, and an algorithm is created from the database(s).

4. An important feature of the invention is that the algorithm created from the database(s) is a trained pattern recognition algorithm which produces the output indicative of the current occupancy state of the seat upon inputting a data set representing the current occupancy state of the seat and being formed from data from the transducers.

5. I believe that the creation of a trained pattern recognition algorithm for use in developing a system for determining the occupancy state of a seat was novel as of the time of the invention of the above-referenced application.

6. I am quite familiar with the prior art cited by the Examiner in the rejection of the claims, i.e., Corrado et al.

7. Corrado et al. does not disclose training of a pattern recognition algorithm. Corrado et al. describes a system for sensing the presence, position and type of an occupant in a seat of a vehicle for use in enabling or disabling a related airbag activator. A preferred implementation of the system includes two or more different but collocated sensors which provide information about the occupant and this information is fused or combined in a microprocessor circuit to produce an output signal to the airbag controller. According to Corrado et al., the fusion process produces a decision as to whether to enable or disable the airbag with a higher reliability than a single phenomena sensor or non-fused multiple sensors. By fusing the information from the sensors to make a determination as to the deployment of the airbag, each sensor has only a partial effect on the ultimate deployment determination. The sensor fusion process is a crude pattern recognition process based on deriving the fusion "rules" by a trial and error process.

8. The sensor fusion method of Corrado et al. requires that information from the sensors be combined prior to processing in the microprocessor, e.g., entry into the algorithm thereof. This combination could be found to unnecessarily complicate the processing of the data from the sensors and other data processing methods might provide better results.

9. Sensor fusion is not a trained pattern recognition algorithm in that it uses manually generated matrices of values, each representing a different occupancy state. Features extracted from signals generated by sensors are compared to the matrices of values to determine which comparison provides the best confidence level (see the discussion at col. 15, line 53 to col. 16, line 23). By contrast, a trained pattern recognition algorithm such as a neural network involves, for example, input of data into an algorithm-generating program which automatically creates the best neural network which can operationally receive input and provide output based on its training.

10. Since sensor fusion appears to be the essence of the Corrado et al. system, not only does Corrado et al. not teach or suggest using a trained pattern recognition algorithm, i.e., an algorithm trained on test data, but one skilled in the art of occupancy determination systems would not have been motivated to eliminate the use of sensor fusion in Corrado et al. for another pattern recognition technique such as a trained pattern recognition algorithm.

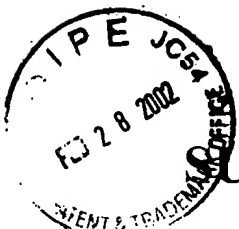
11. I hereby declare that all statements made herein of my own knowledge are true and that all statements on information and belief are believed to be true; and further that these statement are made with the knowledge that willful false statements and the like so made re punishable by fine or imprisonment or both, under Section 1001, Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued therefrom.



David S. Breed

January 26, 2002

Date



SUPPLEMENTAL DECLARATION

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My residence, post office address and citizenship are as stated below next to my name,

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(Number)	(Country)	(Day/Month/Year Filed)	Yes No
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Full name of first joint inventor, (given name, family name)

David S. Breed

Inventor's signature



Date February 6, 2002

Residence Boonton Township, Morris County, New Jersey

Citizenship U S A

Post Office Address 48 Hillcrest Road, Boonton Township, Morris County, New Jersey 07005

Full name of second joint inventor, (given name, family name)

Wilbur E. DuVall

Inventor's signature

Date

Residence Kimberling City, MO

Citizenship U S A

Post Office Address 57 Northwoods Drive, Kimberling City, MO 65686

Full name of third joint inventor, (given name, family name)

Wendell C. Johnson

Inventor's signature

Date

Residence Signal Hill, CA

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Post Office Address 2675 Junipero Avenue, Suite 100, Signal Hill CA 90806

Full name of fourth joint inventor, (given name, family name)

Jeffrey L. Morin

Inventor's signature

Date

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Post Office Address 1504 Moran Avenue, Lincoln Park, Michigan 48146

Full name of fifth joint inventor, (given name, family name)

Kunhong XU

Inventor's signature _____

Date _____

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Full name of sixth joint inventor, (given name, family name)

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Date _____

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Tie-Qi CHEN

Inventor's signature _____

Date _____

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Post Office Address 11919 Fifteen Mile Road, Apt. 2-A Sterling Heights, Michigan 48312

Full name of eighth joint inventor, (given name, family name)

Michael E. Kussul

Inventor's signature *Hyung* _____

Date February 14, 2002

Residence Pontiac, Michigan

Citizenship Ukraine

Post Office Address 8 Wedgewood Lane, Pontiac, Michigan 48340

Full name of ninth joint inventor, (given name, family name)

Andrew J. Varga

Inventor's signature _____

Date _____

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Post Office Address 29292 Marvin, Farmington Hills, MI 48331

SEE PAPER #17



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Full name of fourth joint inventor, (given name, family name) Jeffrey L. Morin

Inventor's signature  Date 01/30/02

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Post Office Address 1504 Moran Avenue, Lincoln Park, Michigan 48146

Full name of fifth joint inventor, (given name, family name) Kunhong XU

Inventor's signature Kimhag Xu Date 01/30/02

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Inventor's signature  Date 12 Feb 2002

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